REMARKS

In the Office Action mailed 12/02/2005, the Examiner rejected claim 14 under 35 U.S.C. s. 112, second paragraph as indefinite, rejected claims 1-3, 6-8, 11 and 14 under 35 U.S.C. s. 103(a) as unpatentable over Kato U.S. Patent 5,289,335 in view of Zahlmann et al. U.S. Patent 6,788,519; rejected claims 4 and 5 under 35 U.S.C. s. 103(a) as unpatentable over Kato in view of Zahlmann et al. and E.F.W. Beck et al. U.S. Patent 2,473,850; rejected claims 9 and 10 under 35 U.S.C. s. 103(a) as unpatentable over Kato in view of Zahlmann et al. and Oertel et al. U.S. Patent 5,500,782; and rejected claims 12 and 13 under 35 U.S.C. s. 103(a) as unpatentable over Kato in view of Zahlmann et al. and Winkelmann U.S. Patent 5,621,602. Claim 14 has been amended to address the indefiniteness objection. Claims 7 and 9 have been canceled. Claims 1 and 8 have been amended and new claim 15 has been added.

The present invention discloses a device for protecting workers working on high voltage electrical transmission cables both from potential rise due to ground faults and from accidental energization of the line. To handle the large current which flows due to accidental energization of the line, it uses a combination of a precision gap with a main insulated gap, such that the flashing of the precision gap causes the destruction of the insulation in the main gap and a shorting of the main electrodes. To prevent the precision gap from flashing when the event is a rise in potential due to a ground fault, a surge arrester and resistor are connected in parallel with the precision gap, whereby the surge arrester has a voltage rating less than the breakdown voltage of the precision gap.

Kato discloses a lightning surge arrester for protecting low voltage

circuits, which would be unsuitable for protecting a worker on high voltage distribution lines as in the present invention. It utilizes a spark gap 28 connected in parallel with a zinc oxide arrester 31 and a non-inductive resistor 51. The spark gap 28 is an air gap between brass fittings 26, 27 (column 7, lines 43-45, Fig. 3, 6) and not a precision gap as defined in the present application in paragraph [0009]. It lacks completely the main insulated gap as claimed. In Kato, the spark gap 28 is insensitive and not precise. See for example column 5, lines 15-20. In the present invention the precision gap is used in combination with the main insulated gap to cause the precision gap to fail at a precise voltage, destroying the insulation and causing the copper bars to short together to carry a high energy current.

Zahlmann et al. ("Zahlmann") discloses an encapsulated spark-gap arrangement for protecting electronic devices from low voltage surges in the region of 1.5 kV (column 1, line 35) in which two electrodes are disposed opposite one another in a conductive housing, with a discharge space between the electrodes, wherein by way of the conductive housing a trigger voltage forms a subsidiary spark to ignite the main spark between the main electrodes. Zahlmann teaches "a pressure-proof, conductive, as a rule metallic encapsulation, in creating an internal trigger electrode by means of which low response voltages can be insured, for instance in order specifically to protect electronic devices for data processing or information technology, with no need to maintain minimal distances between the main electrodes;" (column 4, lines 19-26). Thus Zahlmann discloses a structure for a spark gap arrangement in which, by using a triggered secondary spark, the main spark gap can be ignited at a much lower voltage without the need for reduced tolerances between the electrodes. It remains that in each embodiment, Zahlmann's structure uses an air or gas gap, referred to as the discharge space 17, for the main gap and not a main insulated gap as claimed.

The Examiner states that, "It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the conductors of Kato to incorporate the insulating layer which is disposed between the two conductors and control circuit as disclosed by Zahlmann so that the spark-over voltage between the electrodes is kept constant over operating periods." First, however, there would be no motivation for the person skilled in the art to combine Kato and Zahlmann in the way suggested by the Examiner. The purpose of Zahlmann is to provide a spark-gap arrangement such that the arrangement makes possible a low response voltage in the range less than or equal to 2kV with no need to employ trigger electrodes (column 2, lines 6-14), whereas in Kato the zinc-oxide arrester and non-inductive resistor in series carry the low voltage surge and then switch to the spark gap for the higher voltage, so there is no need to substitute a spark-gap arrangement in Kato which responds at a lower voltage. Zahlmann indeed teaches away from the need for having a surge arrester in parallel with the spark gap to deal with lower voltage surges.

Secondly, by substituting Zahlmann's spark-gap arrester for the spark-gap on Kato, one does not arrive at the claimed invention, since Zahlmann does not provide a main insulated gap as claimed. As indicated above, Zahlmann teaches a discharge space or air gap for the main gap. Thirdly, by substituting Zahlmann's spark-gap arrester for the spark-gap in Kato one does not achieve the benefits of the present invention, since the main gap would spark at less than 2kV volts, which is typically a voltage lower than the voltage of the ground fault, causing the main gap to short to ground prematurely.

It is submitted therefore that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kato in

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view of Zahlmann top arrive at the presently claimed invention. It is submitted therefore that the amended claims are allowable, and issuance of a Notice of Allowance is therefore respectfully requested.

Respectfully submitted,

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